are given an undirected graph and an

9. You have executed the following shared C code to count 1000 numbers by ÷ 6.0

10. In Data Structures, which of the following statements about the worst- ÷ 2.0

2 Programming questions

11. Character set count ÷ 100.0

12. Paired XOR sums ÷ 100.0

Question 11 Max. score: 100.00

Character set count

You are given the following:

- An integer N
- String A consisting lower case English alphabets and having length N

For any string T, you calculate all the distinct characters appearing in the string and store them in a set with name S_T. For example, say T = *"aabeec"*, then S_T = *{a, b, c, e}*.

Two sets of characters are different if and only if there is at least one character in either of the set which is not present in the other set.

For example, say T = *"ab"* and G = *"bc"*, then S_T and S_G are not same since *'c'* if present in S_G but not in S_T. On the other hand, if T = *"ab"* and G = *"bba"*, then $S_T = S_G$.

Task

Consider all substrings of the string A. For each substring U, determine the set S_U. Determine the number of distinct sets that can be obtained. You need to answer T test cases.

Notes

- A substring of a string is a contiguous subsequence of that string. For example, string "earth" is substring of string "hackerearth", but string "erth" is not.

Example

Assumptions

- $T = 1$
- $N = 4$
- A = *"abbc"*

Approach

- All possible substrings of A and corresponding sets in the form (substring, set) are: *(a, {a}), (ab, {a, b}), (abb, {a, b}), (abbc, {a, b, c}), (b, {b}), (bb, {b}), (bbc, {b, c}), (b, {b}), (bc, {b, c}), (c, {c})*
- The distinct sets are *{a}, {a, b}, {a, b, c}, {b}, {b, c}, {c}*
- Therefore, required answer is *6*.

Function description

Complete the *count_sets* function provided in the editor. This function takes the following *2* parameters and returns an integer:

- *N:* Represents the integer N
- *A:* Represents the string A

Input format

Note: This is the input format that you must use to provide custom input (available above the **Compile and Test** button).

- The first line contains a single integer T, which denotes the number of test cases. T also specifies the number of times you have to run the *count_sets* function on a different set of inputs.
- For each test case:
  - The first line contains an integer N denoting the length of the string.
  - The second line contains a string A of length N.

Output format

For each test case, print the number of distinct sets that can be obtained in a new line.

Constraints

$1 < T < 10$

$1 \leq N \leq 10^5$

String A consists of lower case English alphabets.

Code snippets (also called starter code/boilerplate code)

This question has code snippets for C, CPP, Java, and Python.

Sample input 1 Copy

```
2
4
abbc
3
bcb
```

Sample output 1 Copy

```
6
3
```

Explanation

The first line denotes the number of test cases, *T = 2*

The first test case

This is an example. Please refer to that.

The second test case

Assumptions

- *N = 3*
- *A = "bcb"*

Approach

- All possible substrings of *A* and corresponding sets are: *(b, {b})*, *(bc, {b, c})*, *(bcb, {b, c})*, *(c, {c})*, *(cb, {c, b})*, *(b, {b})*
- The distinct sets are *{b}*, *{b, c}*, *{c}*. Please note that *{c, b}* and *{b, c}* are same.
- Therefore, the number of distinct sets is *3*.

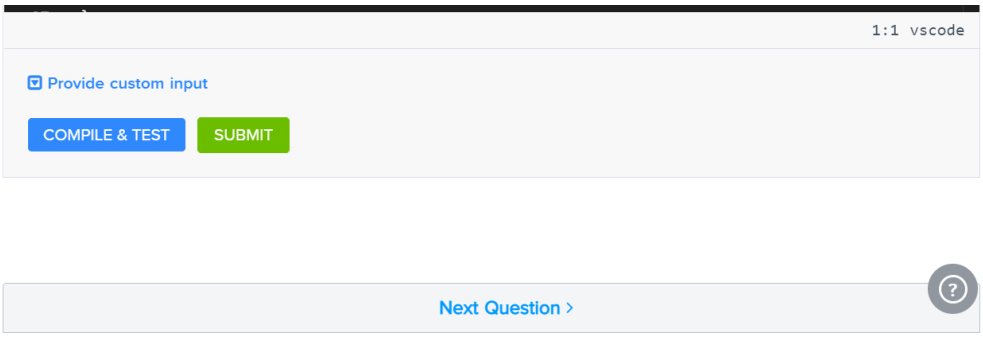
Note: Your code must be able to print the sample output from the provided sample input. However, your code is run against multiple hidden test cases. Therefore, your code must pass these hidden test cases to solve the problem statement.

Time Limit: 9.0 sec(s) for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB
Marking Scheme: Score is assigned if any testcase passes
Allowed Languages: C++, C++14, C++17, Python, Python 3, Python 3.8

New Submission | All Submissions

Save | C++ (g++ 5.4.0) | Full Screen

```cpp
#include<bits/stdc++.h>
using namespace std;

int count_sets (int N, string A) {
   // Write your code here

}

int main() {

    ios::sync_with_stdio(0);
    cin.tie(0);
    int T;
    cin >> T;
    for(int t_i = 0; t_i < T; t_i++)
    {
        int N;
        cin >> N;
        string A;
        cin >> A;

        int out_;
        out_ = count_sets(N, A);
        cout << out_;
        cout << "\n";
    }
```


1:1 vscode
Provide custom input
COMPILE & TEST
SUBMIT
Next Question ›